

CLAIMS

1. A tube connecting apparatus for connecting flexible tubes in sterile condition, the apparatus comprising:

a first clamp and a second clamp which hold at least two flexible
5 tubes;

cutting means for cutting the flexible tubes between the first and second clamps; and

moving means which moves at least one of the first clamp and the second clamp so that the end portions to be connected of the flexible tubes
10 cut by the cutting means contact closely with each other;

wherein the cutting means comprises:

a wafer for melting and cutting the flexible tubes;

a wafer holder which holds the wafer;

heating means for heating the wafer holder;

15 temperature detecting means for detecting the temperature of the wafer holder; and

heating control means for controlling the heating means;

and

the heating control means controls the heating means so that the
20 wafer holder is heated to a predetermined temperature based on output of the temperature detecting means.

2. A tube connecting apparatus for connecting flexible tubes in sterile condition, the apparatus comprising:

25 a first clamp and a second clamp which hold at least two flexible tubes;

cutting means for cutting the flexible tubes between the first and second clamps; and

moving means which moves at least one of the first clamp and the second clamp so that the end portions to be connected of the flexible tubes cut by the cutting means contact closely with each other;

wherein the cutting means comprises:

- 5 a wafer for melting and cutting the flexible tubes;
- wafer heating means for heating the wafer;
- wafer heating control means for controlling the wafer heating means;
- a wafer holder which holds the wafer;
- 10 heating means for heating the wafer holder;
- temperature detecting means for detecting the temperature of the wafer holder; and
- heating control means for controlling the heating means; and
- 15 the heating control means controls the heating means before the wafer is heated by the wafer heating means so that the wafer holder is heated to a predetermined temperature based on output of the temperature detecting means.

20 3. The tube connecting apparatus according to claim 1 or claim 2, wherein

the predetermined temperature is within 50 to 80°C.

25 4. The tube connecting apparatus according to claim 1 or claim 2, wherein

the heating control means controls the heating means so that the temperature of the wafer holder is lower than the predetermined temperature when a subsequent tube connecting operation is not conducted

for a predetermined period of time after a tube connecting operation.

5. The tube connecting apparatus according to claim 1 or claim 2, wherein

5 the temperature detecting means includes a thermister and a temperature reading circuit which measures the temperature of the wafer holder based on an output signal of the thermister.

6. The tube connecting apparatus according to claim 2, wherein

10 the wafer heating control means controls the wafer heating means through constant power control based on a level of electric current and voltage of the wafer.

7. The tube connecting apparatus according to claim 2, wherein

15 the wafer heating control means controls the wafer heating means through pulse width modulation control based on a difference between an amount of electric power consumption of the wafer calculated based on the levels of electric current and voltage of the wafer and an amount of target electric power set in advance.

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